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(12) United States Patent
Gupta et al.**(10) Patent No.: US 6,355,799 B1**
(45) Date of Patent: Mar. 12, 2002**(54) SUBSTITUTED BENZENE COMPOUNDS,
PROCESS FOR THEIR PREPARATION, AND
HERBICIDAL AND DEFOLIANT
COMPOSITIONS CONTAINING THEM****(75) Inventors:** Sandeep Gupta, Concord, OH (US);
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OH (US)**(*) Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.**(21) Appl. No.:** 09/530,373**(22) PCT Filed:** Aug. 21, 1998**(86) PCT No.:** PCT/US98/17197

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Oct. 27, 1997.**(51) Int. Cl.⁷** C07D 239/02**(52) U.S. Cl.** 544/309; 544/311; 544/312**(58) Field of Search** 544/242, 309,
544/311, 312**(56) References Cited****U.S. PATENT DOCUMENTS**

| | | | |
|-------------|---------|-----------------|---------|
| 4,746,352 A | 5/1988 | Wenger et al. | 71/90 |
| 4,859,229 A | 8/1989 | Wenger et al. | 71/92 |
| 4,881,967 A | 11/1989 | Semple | 71/92 |
| 4,927,451 A | 5/1990 | Brouwer et al. | 71/92 |
| 5,084,085 A | 1/1992 | Theodoridis | 71/92 |
| 5,116,404 A | 5/1992 | Ishii et al. | 71/92 |
| 5,169,431 A | 12/1992 | Enomoto et al. | 71/92 |
| 5,281,571 A | 1/1994 | Woddard et al. | 504/225 |
| 5,281,574 A | 1/1994 | Enomoto et al. | 504/243 |
| 5,356,863 A | 10/1994 | Satow et al. | 504/243 |
| 5,441,925 A | 8/1995 | Theodoridis | 504/243 |
| 5,476,834 A | 12/1995 | Takemura et al. | 504/243 |
| 5,602,077 A | 2/1997 | Amuti et al. | 504/243 |
| 5,759,957 A | 6/1998 | Andree et al. | 504/243 |

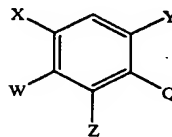
FOREIGN PATENT DOCUMENTS

| | | |
|----|-------------|-----------|
| EP | 705829 | 10/1996 |
| JP | 03215476 | • 9/1991 |
| JP | 09301973 | • 11/1997 |
| WO | WO 8501939 | 5/1985 |
| WO | 9100278 | • 1/1991 |
| WO | WO 95/02580 | 1/1995 |
| WO | WO 95/23509 | 9/1995 |

| | | |
|----|--------------|-----------|
| WO | WO 9/07104 | 2/1997 |
| WO | WO 97/06150 | 2/1997 |
| WO | 9708170 | • 3/1997 |
| WO | WO 9708171 | 3/1997 |
| WO | WO 97/11060 | 3/1997 |
| WO | WO 9712886 | 4/1997 |
| WO | WO 971/12883 | 4/1997 |
| WO | WO 97/28127 | 8/1997 |
| WO | 9742188 | • 11/1997 |

OTHER PUBLICATIONSChemical Abstracts, vol. 96, No. 24, Jun. 14, 1982, p. 43,
column 1, Abstract No. 200709g., Chernikov, A.Y. et al.
Thermostable Composition. FR 2,476,068, Aug. 21, 1981.
Chemical Abstracts, vol. 69, No. 23, Dec. 2, 1968, p.
8993, column 1, Abstract No. 96206v, Agripat, S.A.
"2-Nitro-3-(and 5)-phenoxy (and pnenylthio)anilines and
their 0-phenylenediamine derivatives." FR 1,499,717, Oct.
27, 1967.Chemical Abstracts, vol. 45, No. 16, Aug. 25, 1951, p. 1951,
column 1, Abstract No. 7033, Finger, G.C. et al., "Aromatic
Fluorine compounds. II. 1,2,4,5-Tetrafluorobenzene and
related compounds" J. Am. Chem. Soc., 1951, 73, 145-9.
Hall et al. "Formation of cis, cis-1, 4-Dicyano-1,3-buta-
diene by Thermal Decomposition of 1,2-Diazidoben-
zenes", Journal of the American Chemical Societ, Nov. 8,
1967, vol. 89, No. 23, pp. 5856-5861.Wittek, P.J. "Synthetic Studies of the Anitumor Antibiotic
Stretonigrin. 3 synthesis of the C-D Ring of Strepoigrin by
an Unsymmetrical Ullmann Reaction", Journal of Organic
Chemistry, Mar. 1979, vol. 44, No. 5 pp. 870-872.Meegalla SK et al., "Synthesis and Pharmacological Evalu-
ation of Isoindolo[1,2-b]quinazolinone and Isoindolo[2,
1-a]benzimidazole Derivatives Related to the Antitumor
Agent Batracylin", Journal of Medicinal Chemistry, Sep. 30,
1994, vol. 37, No. 20, pp. 3434-3439.Kato S. et al., "Synthesis of 4-Chloro-7-ethoxy-
2(3H)-benzoxazolone-6-carboxylic Acid", Journal of Het-
erocyclic Chemistry, Jul.-Aug. 1996, vol. 33, No. 4, pp.
1171-1178.

* cited by examiner

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Macpeak & Seas, PLLC**(57) ABSTRACT**Novel herbicidal and defoliant substituted aniline derived
compounds represented by general structure (I)are described. W, X, Y, Z, and Q are as defined in the
disclosure. Also described are the processes for the manu-
facture of these compounds and agriculturally suitable com-
positions containing these as active ingredients which are
useful as herbicides for general or selective pre-emergent or
post-emergent control of undesired plant species and defo-
liants at very low concentrations of these biologically active
compounds.**14 Claims, No Drawings**